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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
PROCTOR, JASON SCOTT	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 08/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/965,905	WALACAVAGE ET AL.	
	Examiner	Art Unit	
	Jason Proctor	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-21 were presented for examination. Claims 1-21 were rejected in Office Action mailed on 4 February 2005. Applicants' response dated 6 June 2005 has amended claims 1, 9-12, 20, and 21. Claims 1-21 have been submitted for reconsideration.

Claims 1-21 have been rejected.

Response to Double Patenting Rejection

1. The Examiner thanks Applicants for clarifying for the record the distinguishing features claimed in US Patent Application No. 09/965,904 in contrast to the instant application. In particular, Applicants' argue primarily that:

> Claim 1 of co-pending Application No. 09/965,904 is claiming a method of logical modeling operator interaction with a programmable logic controller logical verification system including constructing a flowchart of interaction of an operator in a workcell using a computer [...] Claim 1 of the present application does not claim this feature.
>
> Further, claim 1 of the present application claims a method of part flow for a programmable logic controller logical verification system including constructing a simulation model of a part flow in a manufacturing line using a computer [...] Claim 1 of co-pending Application No. 09/965,904 does not claim this feature.

Applicants' arguments have been fully considered and found persuasive. The previous double patenting rejection based on US Patent Application No. 09/965,904 has been withdrawn.

Response to Rejections under 35 U.S.C. § 101

2. The Examiner thanks Applicants for amending independent claims 1, 12, and 20 to positively recite the use of a computer in performing the methods of simulation. This language

restricts the broadest reasonable interpretation of the claims to the technological arts and obviates the previous rejections under 35 U.S.C. § 101. Those rejections have been withdrawn.

Response to Rejections under 35 U.S.C. § 112, first paragraph

3. The Examiner thanks Applicants for clarifying remarks regarding the written description requirement of 35 U.S.C. § 112, first paragraph. The Examiner especially thanks Applicants for indicating the portions of the specification that would reasonably convey to a person skill in the art to implement a manufacturing line according to the part flow simulation model. Accordingly, the previous rejections under 35 U.S.C. § 112, first paragraph, have been withdrawn.

Response to Rejections under 35 U.S.C. § 112, second paragraph

4. The Examiner thanks Applicants for amending the claims to clarify the patent protection sought by Applicants. The previous rejections under 35 U.S.C. § 112, second paragraph, have been withdrawn.

Response to Rejections under 35 U.S.C. § 102

5. Regarding the rejection of claims 1-21 under 35 U.S.C. § 102(b) as being anticipated by "Handbook of Simulation", edited by Jerry Banks, Applicants argue primarily that:

> Banks does not disclose constructing a simulation model of a part flow in a manufacturing line using a computer and determining if the part flow represented in the simulation model is correct. Banks also does not disclose using the part flow simulation model to test PLC code and implementing the manufacturing line according to the part flow simulation model.

The Examiner concurs that Banks does not anticipate the amended claim language. Applicants' arguments have been fully considered and have been found persuasive. The previous rejections under 35 U.S.C. § 102(b) have been withdrawn.

Outstanding Rejections

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-21 are rejected under 35 U.S.C. § 102(b) as being anticipated by "Emulation of a Material Delivery System" by Todd LeBaron and Kelly Thompson (LeBaron).

Regarding claims 1, 10-12, 20, and 21, LeBaron discloses:

A computer-implemented method for verification of part flow in a system [*"Emulation of the complex pick and pack conveyor system will be presented."* (page 1055, left column, Abstract); *"The material handling system consists of conveyor sections which continuously move carriers around a closed loop that connects all pick and pack stations."* (page 1055, left column, System Description)] including a programmable logic controller verification [*"Routing logic, PLC or PC control software, sequencing algorithms, and more can be integrated, tested, and debugged within a simulation environment."* (Henceforth "control logic" refers to at least

controller logic in a PLC.) (page 1055, left column, Abstract); *Emulation has been used for a Rapistan Systems project to test, debug, and optimize complex algorithms and control logic."* (page 1055, left column, Abstract)], comprising the steps of:

Constructing a simulation model of a part flow in a manufacturing line using a computer [*"The material handling system consists of conveyor sections which continuously move carriers around a closed loop that connects all pick and pack stations."* (A part flow in a manufacturing line.) (page 1055, left column, System Description); *"Emulation of the complex pick and pack conveyor system will be presented."* (page 1055, left column, Abstract)];

Executing the simulation model of the part flow, wherein the simulation model interacts with a PLC logical verification system [*"Emulation of the Rapistan control system for this project integrates a simulation model with the actual control system. The simulation model provides the output for evaluating control logic and algorithms."* (page 1055, right column, Emulation)];

Determining if the part flow represented in the simulation model is correct [*"The emulation used at Rapistan Systems was able to prove that the system could handle the projected growth in daily orders."* (page 1060, left column, Summary)];

Modifying the part flow represented in the simulation model if the part flow represented in the simulation model is not correct [*"RULE1 was developed to improve the FIFO algorithm."*, (page 1058, right column, The RULE1 Algorithm)]; and

Using the part flow simulation model to test PLC code [*"Emulation provides the graphical and statistical output needed to accurately evaluate different algorithms and control logic."* (page 1060, left column, Summary)] and implementing the manufacturing line according

to the part flow simulation model [*"during the refinement process, two initial algorithms were developed and compared. These two algorithms are called the FIFO and RULE1."* (page 1057, right column, Algorithm Development); *"The emulation results indicate that using the correct order scheduling and pack assignment algorithm is key to improving pack station utilization and system throughput."* (page 1060, left column, Analysis) The clear implication is that the manufacturing line is implementing according to the analysis of the emulation results.].

Regarding claims 2-5 and 13-16, LeBaron discloses selecting a part generator, generating a part with the part generator, and moving the generated part to a part location [*"Emulation of the complex pick and pack conveyor system will be presented."* (page 1055, left column, Abstract); *"All of the components for a particular order are assigned and routed to a specific pack station."* (page 1055, right column, System Description); The analysis is conducted for a simulated 23-hour period (page 1060, left column, Analysis) which implicitly discloses the generation of components for a particular order so that the emulation can fulfill the order.].

Regarding "testing the generated part at the part location", the specification teaches this limitation as determining if the part is present or not present (specification as amended, page 12, lines 9-11). LeBaron discloses emulation of a pick and pack conveyor system and therefore implicitly discloses "testing the generated part at the part location" as the ability to detect if the part is present or not present is a basic underlying principle in the proper operation of a pick and pack conveyor system. Further emphasis of this is LeBaron's disclosure [*"The goal in developing algorithms was to process the required number of orders per day within the planned facility schedule. Fully utilizing the pack stations is key in accomplishing this goal."* (page 1057,

right column, Problem Description)] that clearly implies that pack stations can determine whether a necessary generated part is present at that pack station.

Regarding claims 6-8 and 17-19, LeBaron discloses constructing records for the parts [*orders*] wherein the record has at least one resource and at least one capability [*"Historical data was used to generate daily order profiles (as in Table 1)."* (page 1057, right column, Problem Description); Table 1 shows records [*orders*] for the parts, including a resource [*Pick Station*] and a capability [*# Pick Types*]].

Regarding claim 9, LeBaron discloses that the step of generating PLC code if the part flow represented in the simulation model is correct is obviated by actually using the PLC code [*"A main benefit of emulation over pure simulation is it eliminates the need to re-implement code. By developing and refining the control logic and algorithms in the control software, it exists as developed."* (page 1055, right column, Emulation)]. Regardless, validated PLC code is produced by the method disclosed by LeBaron.

Conclusion

Art considered pertinent by the examiner but not applied has been cited on form PTO-892.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached at (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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